National Institute of Environmental Health Sciences

Distribution and seasonality of Phlebotomus sand flies in cutaneous leishmaniasis foci, Judean Desert, Israel

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Abstract:

The ecology of Phlebotomus sand flies in cutaneous leishmaniasis foci as a result of Leishmania tropica in the Judean Desert was studied. Between 2005 and 2007, >265,000 specimens were trapped outdoors and 1,233 specimens were collected indoors. The catches included Phlebotomus sergenti Parrot, Phlebotomus papatasi (Scopoli), Phlebotomus syriacus Adler & Theodor, and Phlebotomus tobbi Adler & Theodor. P. sergenti, the local vector of Leishmania tropica, comprised 90% of outdoor catches, and relatively few were caught indoors. Conversely, P. papatasi were > 90% of the indoor collections, and only a few were caught outdoors. The efficiency of trapping methods varied, but species composition and sex ratio remained constant irrespective of method. Sand flies were abundant on slopes facing east where wind velocity was low, and scarce on slopes facing west and residential areas. Large numbers and high proportion of males that occur near breeding sites were found in man-made rock walls and in rock crevices on slopes of uncultivated hills. Population increase began in April, was more intensive between May and November, peaked in August-September, and significantly decreased in December. Indoors, most of the P. sergenti (< 80%) were collected from September to November. A few sand flies were found between January and March. The effects of climatic factors and human activities on sand fly populations and the risk of Leishmania infections are discussed.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Meteorological Factors

Geographic Feature:

resource focuses on specific type of geography

Desert

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Israel

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Fly-borne Disease

Fly-borne Disease: Leishmaniasis

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified